# Encoded Guidelines for Targeted Latent Tuberculosis Screening Using an Electronic Medical Record

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## Research Objective

To determine the impact of information technology on embedding the latent tuberculosis infection (LTBI) screening guidelines in an electronic medical record (EMR) in a large health care system. The long-term goal of the study is to test clinician adherence to LTBI screening guidelines using an EMR system. However, preliminary results are presented on the potential impact on providers on implementing the alerts on targeted high-risk patients.

## Research Methods and Study Design

The Centers for Disease Control and Prevention (CDC) has recommended targeting high-risk groups (i.e. foreign-born, HIV-infected, and homeless) for LTBI screening. Denver Health (DH) is a large safety-net health provider serving over 125,000 individuals annually. Using an integrated (outpatient/inpatient) EMR, DH evaluates patients for LTBI risk at the time of registration. Patients are identified as being at risk by the processing of an Arden Syntax based rules algorithm. This algorithm evaluates a variety of risk factors as identified in the CDC guideline. Completion of the assessment, documentation of the placement of the purified protein derivative (PPD), and documentation of the PPD results is done on a web-based guided documentation application which is operated through an application service provider (ASP) model. A baseline EMR-derived LTBI risk assessment is being conducted for three months to measure underlying risk and screening rates. During intervention, care providers will receive an EMR generated alert regarding risk for LTBI and suggestions for screening.

## Principal Findings

Initial EMR based assessment began on October 2, 2002, with 4,627 individuals registered during a 3-week period. Of these, 46% were found to have some latent tuberculosis risk factor. Among those at risk, 52% were born in a country at higher risk for LTBI infection, with 90% born in Mexico. Patients less than 18 years accounted for 31% of those registered, with a LTBI risk rate of 27%. Among these, 43% were solely at risk due to birth country. In the total group, key risk factors (in addition to birth county) included hematologic disease (20% of those at risk), immunosuppression (14%), alcoholism (14%), injection drug use (6%) and hepatic disease (6%).

## Conclusions

An EMR can be adapted to provide real-time risk assessment for LTBI screening guidelines. Impact of such risk assessment on clinic workflow and adherence to guidelines still need to be evaluated. The enhancements in information technology through alerts and guided online documentation provide a promising method to increase screening of patients at high risk of LTBI.

Provider adherence to screening guidelines through rules-based electronic feedback may improve patient safety and quality of care in an outpatient setting. Taking advantage of information system investments to assist providers on a real-time basis can be a significant technology benefit.

## References

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